

## CLAIMS

1. A fail-safe circuit for gas valves, in particular for piezo-operated gas valves, with at least one input (11) that can be connected to a regulator device and at least one output (12, 13) that can be connected to a gas valve, where the fail-safe circuit (10) only supplies an output voltage that is required to open a gas valve to the or to each output (12, 13) if an input signal containing at least two different, successive frequency signals is provided by the regulator device at an input (11) of the fail-safe circuit (10).

2. The fail-safe circuit as claimed in claim 1, characterized by a charging circuit (14), which has at least one capacitor (16), where the charging circuit (14) charges the or each capacitor (16) in the charging circuit (14) when a first frequency signal is applied or is present in the input signal.

3. The fail-safe circuit as claimed in claim 2, characterized in that the charging circuit (14) charges the or each capacitor (16) of the same only when the first frequency signal is present in the input signal.

4. The fail-safe circuit as claimed in claim 2 or 3, characterized in that the charging circuit (14) does not charge the or each capacitor (16) in the charging circuit (14) when a second frequency signal is applied or is present in the input signal, the second frequency signal having a lower frequency than the first frequency signal.

5. The fail-safe circuit as claimed in one or more of claims 2 to 4, characterized in that the or

each capacitor (16) in the charging circuit (14) discharges when a second frequency signal is applied or is present in the input signal, the second frequency signal having a lower frequency than the first frequency signal.

6. The fail-safe circuit as claimed in one or more of claims 1 to 5, characterized by a voltage transformer circuit (15), which produces an output voltage ( $V_{OUT}$ ) that is required to open the gas valve from a supply voltage ( $V_{BAT}$ ) when the second frequency signal is applied or is present in the input signal.

7. The fail-safe circuit as claimed in claim 6, characterized in that the voltage transformer circuit (15) has at least one capacitor (28), which charges when the second frequency signal is present in the input signal.

8. The fail-safe circuit as claimed in claim 7, characterized in that the or each capacitor (28) of the voltage transformer circuit (15) discharges when the first frequency signal is present in the input signal, and hence provides an output voltage ( $V_{OUT}$ ) that is required to open the gas valve.

9. The fail-safe circuit as claimed in one or more of claims 6 to 8, characterized in that the voltage transformer circuit (15) has a transistor (24), the base of which is connected via a resistor (23) to the capacitor (16) of the charging circuit (14), where the transistor (24) of the voltage transformer circuit (15) only conducts if the capacitor (16) of the charging circuit (14) discharges when the second frequency signal is applied in the input signal.

10. The fail-safe circuit as claimed in one or more of claims 1 to 9, characterized in that the first

frequency signal has a frequency of about 500 kHz and the second frequency signal has a frequency of about 10 kHz, and where the two frequency signals are applied successively in the input signal in such a way that a time period of about 30 milliseconds with the first frequency signal of about 500 kHz is respectively followed by a time period of about 100 milliseconds with the second frequency signal of about 10 kHz.